Space and Naval Warfare Systems Center Atlantic

Beyond the Line of Sight

Meeting Tomorrow's Challenges

Small Business and Industry Outreach Initiative (SBIOI)
Thirty-sixth Symposium

16 April 2015

Presented By:
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Surface Sub-Portfolio Lead

Topics

▼ Introduction

▼ Organizational Overview

  ▪ Within SPAWAR Systems Center Atlantic

  ▪ Sub-Portfolio Mission and FY15 Goals

  ▪ IPT Overview

▼ From Engineering to Integration to Testing – Delivering Quality Products to the Fleet

We need 21st Century Leadership that…

▼ Understands the velocity of change

▼ Meets change head-on

▼ Communicates well and often

▼ Nurtures innovation and new ideas

▼ Empowers teams

▼ Keeps eyes on global environment

▼ Holds the ethical line under pressure

▼ Leadership is a contact sport

CONSTANT CHANGE
(at a faster pace)

Leaders help drive change

Platform Installation and In-Service Support (PII) Overview

SPAWAR Systems Center ATLANTIC

PII Portfolio Overview

The PII portfolio provides C4I installation management and execution for new construction and modernization platforms, in-service support (e.g. ISEA), depot operations, and direct fleet and shore support to deployed systems. The PII portfolio encompasses support to systems that have reached a full rate production decision and/or have moved into sustainment and focuses on large scale systems of systems integration efforts and delivers superior C4I Capabilities for Surface and Sub-Surface Platforms, Shore Sites and Air Platforms.
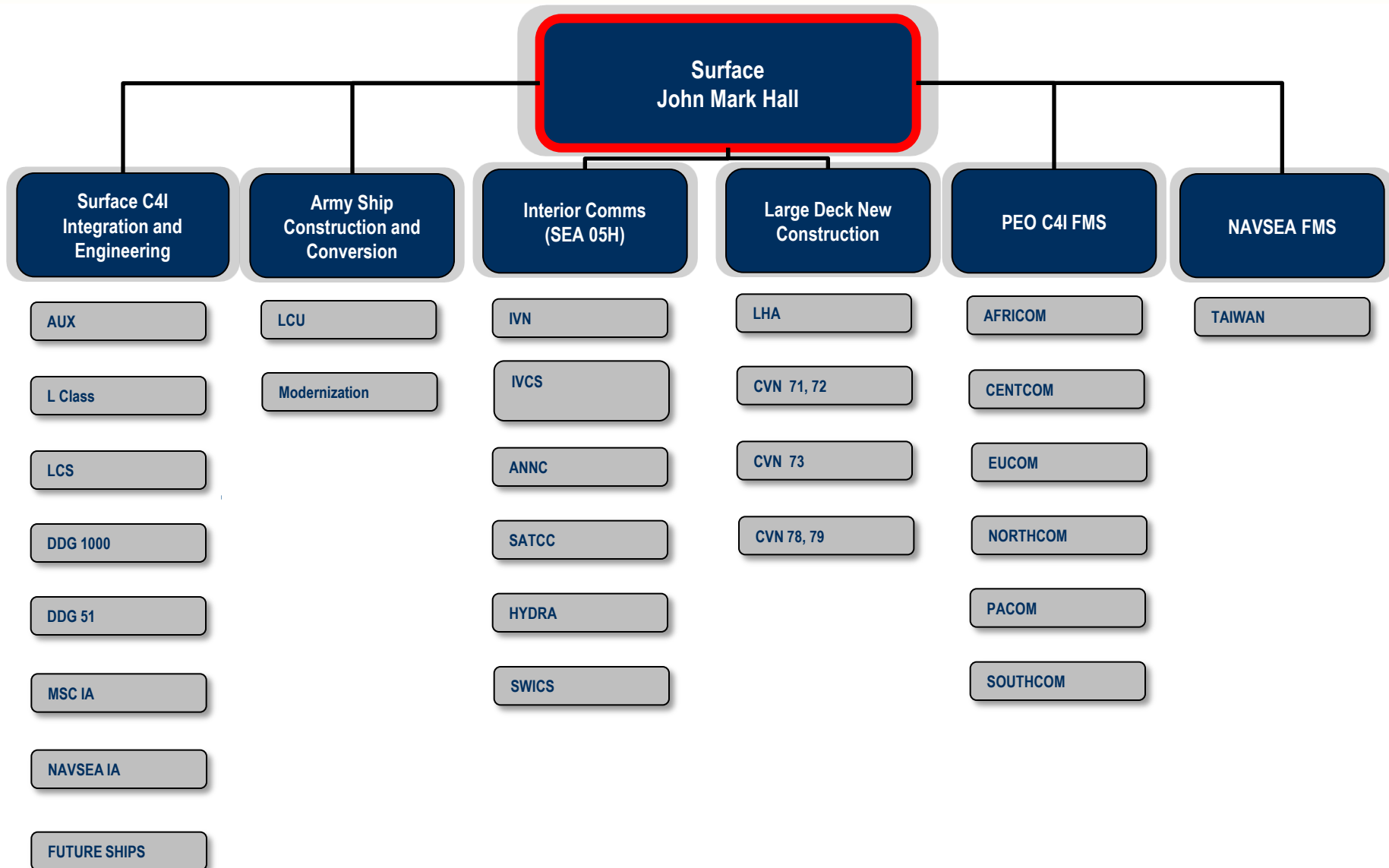
Top Strategic Sponsors

- PEO Ships
- PEO Carriers
- PEO Subs
- PEO LCS
- PEO C4I (700's)
- MSC
- NAVSUP
- NAVAIR (PMA 290, PMA 299)
- NAVFAC
- USCG
- MDA

Sub Portfolios

- Fleet Readiness
- Surface
- Air
- Subsurface
- Platform Services
- USCG

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Surface Sub-Portfolio Organizational Chart

Surface
John Mark Hall

Surface C4I Integration and Engineering
- AUX
- L Class
- LCS
- DDG 1000
- DDG 51
- MSC IA
- NAVSEA IA
- FUTURE SHIPS

Army Ship Construction and Conversion
- LCU
- Modernization

Interior Comms (SEA 05H)
- IVN
- IVCS
- ANNC
- SATCC
- HYDRA
- SWICS

Large Deck New Construction
- LHA
- CVN 71, 72
- CVN 73
- CVN 78, 79

PEO C4I FMS
- AFRICOM
- CENTCOM
- EUCOM
- NORTHCOM
- PACOM
- SOUTHCOM

NAVSEA FMS
- TAIWAN

Surface C4I Engineering and Integration IPT

Program Office: PMW 760, MSC, NAVO, NAVSEA

Mission: The Surface C4I Engineering and Integration IPT is focused on delivering superior integrated and interoperable C4I capabilities to the Navy and Military Sealift Command.
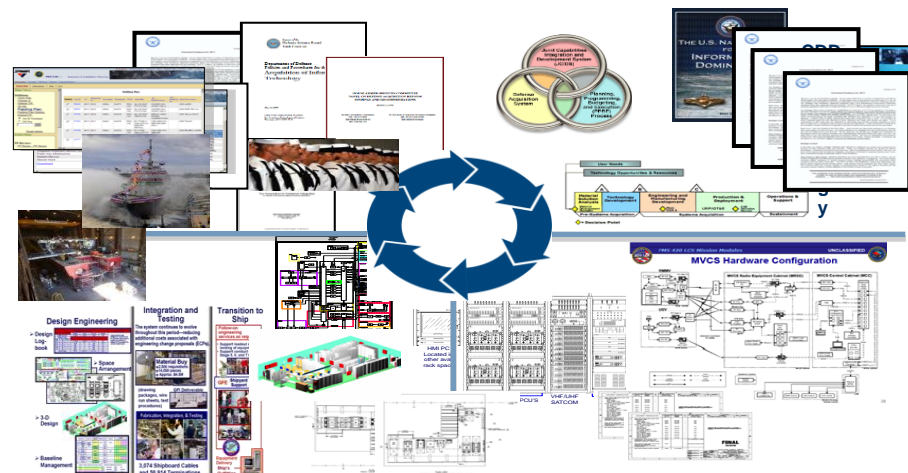
Accomplishments:

- JHSV C4I Lightning Bolt Award
- Launch of LCS 5 and LCS 7
- Launch of DDG 1000
- LCS BZ Award for support of AT
- JHSV BZ Award for successful FCT
- LPD-24 OWLD - 31 May 2014
- LPD-26 TIF RDD to Shipyard - June 2014

Future Milestones and Strategic Initiatives:

- Consolidated Test Management
- MSC ISEA and Modernization
- MSC IA Support Expansion
- Provide LCS centric, but seamless Platform ISEA support

Large Deck New Construction IPT

Program Office: PMW 750

Mission: Deliver engineering, integration, installation, testing, and post-delivery C4I support services to Navy Large Deck Ships (CVN and LHA) which are fully operational prior to deployment with the goal of turn over prior to the unit entering its pre-deployment training cycle.

Accomplishments:

• CVN 71 TIF testing results and Lightning Bolt Award
• CVN-73 Project Funded
• CVN-79 Project Funded
• LHA-7: Conduct CDR and begin production (TIF efforts)

Future Milestones / Strategic Initiatives:

• Interactive Test Procedure (ITP) Testing Pilot
• TIF Improvement and Material Management Initiatives
• LAR Inventory Management and Visibility
• Develop a CANES Rack Standardization Plan
• Collaborate on RCS Non-Program of Record (POR) Rack Standardization

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Interior Communications (IC) IPT

Program Office: NAVSEA 05H

Mission: Deliver superior Interior Communications (IC) capabilities for the entire Navy Fleet. Provide the acquisition, engineering, logistics, and execution of projects below within the Integrated Voice Communication Network (IVCN) and overall IC Voice Strategy.

Projects

- Integrated Voice Network (IVN), AN/STC-4
- Integrated Voice Communication System (IVCS), AN/STC-2 and AN/STC-3
- Announcing (1,3,5,6MC) and Intercom Systems (23/26MC, 46MC, 12CK) (ANN)
- Shipboard Air Traffic Control Communications (SATCC)
- AN/SRC-59 Shipwide Interior Wireless Communication System (SIWCS)

Accomplishments

- IVCS – Completed the first ever DIAS MDA comm systems installation
- IVN; 12CK terminal install in FLAG BRIDGE
- IVN; LHA 7 system procurement and integration testing
- ANN; LPD 18 Digital Microphone Control Station (DMCS) Installation
- Completed 2 SIWCS Phase 1 equipment builds, 3 SIWCS Phase 2 equipment builds, and 1 SIWCS Phase 3 equipment

Future Milestones:

- LHA-7, LHA 8 New Construction GFE
- CVN 68 Class; IVCN Back fits and Tech Refresh's
- AEGIS Ashore/MDA; Romania, IVCS/DIAS Comm Systems
- DDG 116 - 122; SIWCS, IVCS, and ANNC (DIAS)
- CG's; HYDRA, IVCS, ANNC (DIAS)
- LPD 17 Class Upgrades/system support
- FMS Polish Navy; SIWCS system procurements

PEO C4I PMW 740 FMS IPT

Program Office: PMW 740

Mission: Deliver professional services and quality products to US partner nations in support of SPAWAR PMW 740 through Foreign Military Sales (FMS) cases. Provide engineering, acquisition, delivery, installation, training and sustainment support as required by each case.

Current Cases:

- AFRICOM
- CENTCOM
- EUCOM
- NORTHCOM
- PACOM
- SOUTHCOM

Accomplishments:

Multiple Bravo Zulus and Letters of Appreciation:

- Latvia (H8-P-LAF) – Identity Management FMS
- Bahrain (H8-P-LAO) – Identity Management FMS
- Iraq (G3-P-SBA/IQ-P-GAH – C4ISR
- Brazil (BR-P-BUQ) - CENTRIXS

Future Milestones and Strategic Initiatives Anticipated New Cases:

- Afghanistan (IdM)
- Egypt (HF Radios)
- Niger Air Base (IdM)
- Tunisia (IdM)
- Romania (NMSS)
- Pakistan (VSAT)
- Uganda (IdM)

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NAVSEA FMS IPT

Program Office: PMS 326

Mission: Provide an overarching management structure for SPAWAR Atlantic engineering solutions and service support for NAVSEA PMS 326 Ships Transfer Office through design, development, acquisition, procurement, delivery, technical and logistics support for shipboard Communications systems.

Projects

Taiwan
- Case TW-L-PEJ is presently scheduled to complete
- Provide improved HF Communications (Voice and data) for the ROC-N PFG-2/DDG-1801 Class ships
- Permit interoperability with US Navy vessels operating in the same theater

Accomplishments

- Provided the following systems for five PFGs - 2 refurbished AN/URT-23D HF Transmitters, 2 R-2368A Receivers and 2 AN/URA-38 Couplers per hull
- Provided HF systems maintenance/alignment training for host nation on six PFGs
- Provided refurbished URQ-23s
- Provided 5 URT-23D HF Transmitters, 5 R2368A HF Receivers and tested 5 URA-38 HF Couplers for a DDG

Future Milestones and Strategic Initiatives

- DDG 1802 HF Upgrades
- Pursue DDG-1803 Upgrades
- FFG Ship transfers recently approved by the US Congress

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Army Watercraft Systems (AWS) IPT

Program Office: PEO CS & CSS

Mission: Deliver integrated C4ISR systems to Army Watercraft vessels that enable information dominance ISO Joint fleet operations.

Projects

- Landing Craft Utility (LCU) 2000 Class C4ISR Upgrades
- Fleet Modernization

Accomplishments

- Logistics Support Vessel (LSV)-1, 2, 3, 4, 5, 6 class SLEP upgrades delivered
- LSV-7, 8 C4I Modernization Upgrades delivered
- LCU PRR - 16 May 2013
- LCU LRIP 1 C4ISR Upgrade delivered
- LCU LRIP 2, 3, 4 C4ISR Upgrades Ongoing
- 48 Man Over Board Indicator (MOBI) installations delivered

Future Milestones and Strategic Initiatives

- FY16-21 C4ISR Modernization plan is being developed for PD AWS.
- Continue execution of LCU-2000 class C4ISR Upgrades
- Mode 5 IFF fleet upgrades (30)
- Army Watercraft Integration with Joint Battle Command-Platform fielding; JCR/JCR-LOG
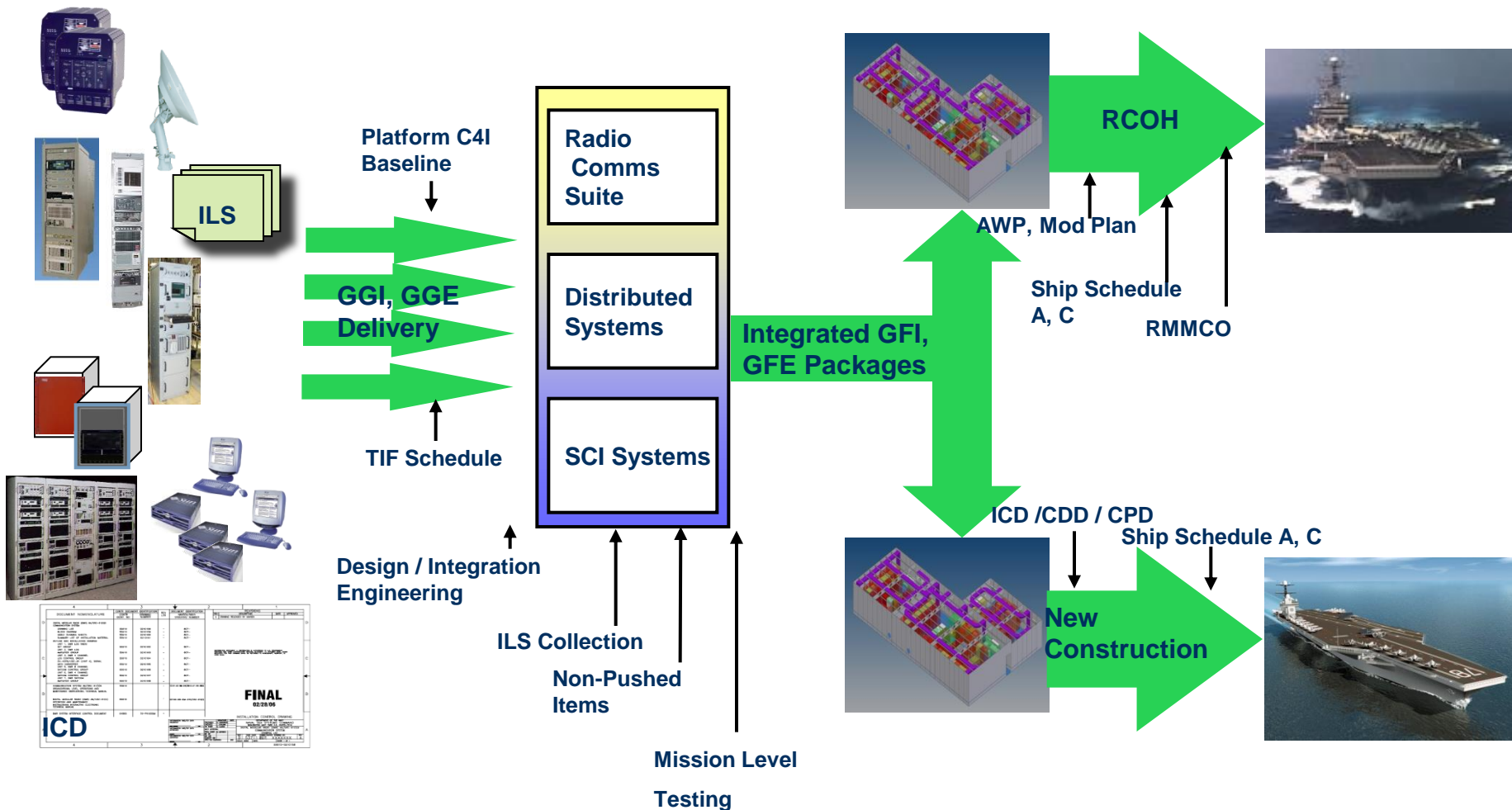- Maneuver Support Vessel (MSV) Acquisition

From Engineering to Integration to Testing – Delivering Quality Products to the Fleet

Integration and Test Process

C4I Programs (PMW-100s)

DIAs and TIFs

Shipyard

ILS

Platform C4I Baseline

GGI, GGE Delivery

TIF Schedule

Design / Integration Engineering

ILS Collection

Non-Pushed Items

Mission Level Testing

ICD

Radio Comms Suite

Distributed Systems

SCI Systems

Integrated GFI, GFE Packages

RCOH

AWP, Mod Plan

Ship Schedule A, C

RMMCO

ICD /CDD / CPD

Ship Schedule A, C

New Construction

Purpose of the Initial TIF Effort

▼ Land based validation of design

- Verifies interoperability of System of systems
- Verifies equipment layout will fit the planned ship space layout
- Production and validation period for non 2Z equipment and intra compartment cables
  - Land based environment conducive to production
- Allows for change management within government controls (pre GFE delivery)
  - Enables technology insertion
  - Avoid Builder Delays

▼ Risk Mitigation

- Integration period early in the ship construction cycle
- Removes system integration from the ship building critical path
- Supports Just-in-Time delivery principles

▼ Test Procedure Development

- Allows for Industrial Test procedure development and validation
- Allows for mission based test execution
- Validates the equipment integration and inter-operability between systems

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Platforms Supported in TIF

Some of the Executed / Planned Integration Efforts that support a variety of Platforms

CVN

LPD

JHSV

LHA / LHD

**T'AGM(R)**

**T'AKE**

USCG Deepwater

MPF

Getting More Value Part 1 – TIF to PIF

▼ Increase efficiency and reduce overall cost of each ship Class through the use of 'cellular manufacturing' principles and 'point of use' material management techniques.

- **Cellular Manufacturing**: PIF will incorporate the Cellular Manufacturing Model for workplace design which has become an integral part of lean manufacturing systems.
  - Take full advantage of the similarity between parts, through standardization and common processing.
    - Rack Integration
  - Regardless of the intended platform or hull, would proceed through the cells until complete and ready for sub-system test.

- **Hardware Standardization and Consignment Bin Stocking**: By incorporating cellular manufacturing, particularly at the initial hardware installation step, it would allow utilization of bin stocking and consignment inventory vendor arrangements.
  - 90% of all hardware will be used in one cell will be easier to manage and control.
  - Facilitate the standardization of rack hardware across all systems thereby reducing inventory costs and facilitating larger bulk buys.
  - Lead to integration efficiency gains.

Getting More Value Part 2 – Not Just "Testing"
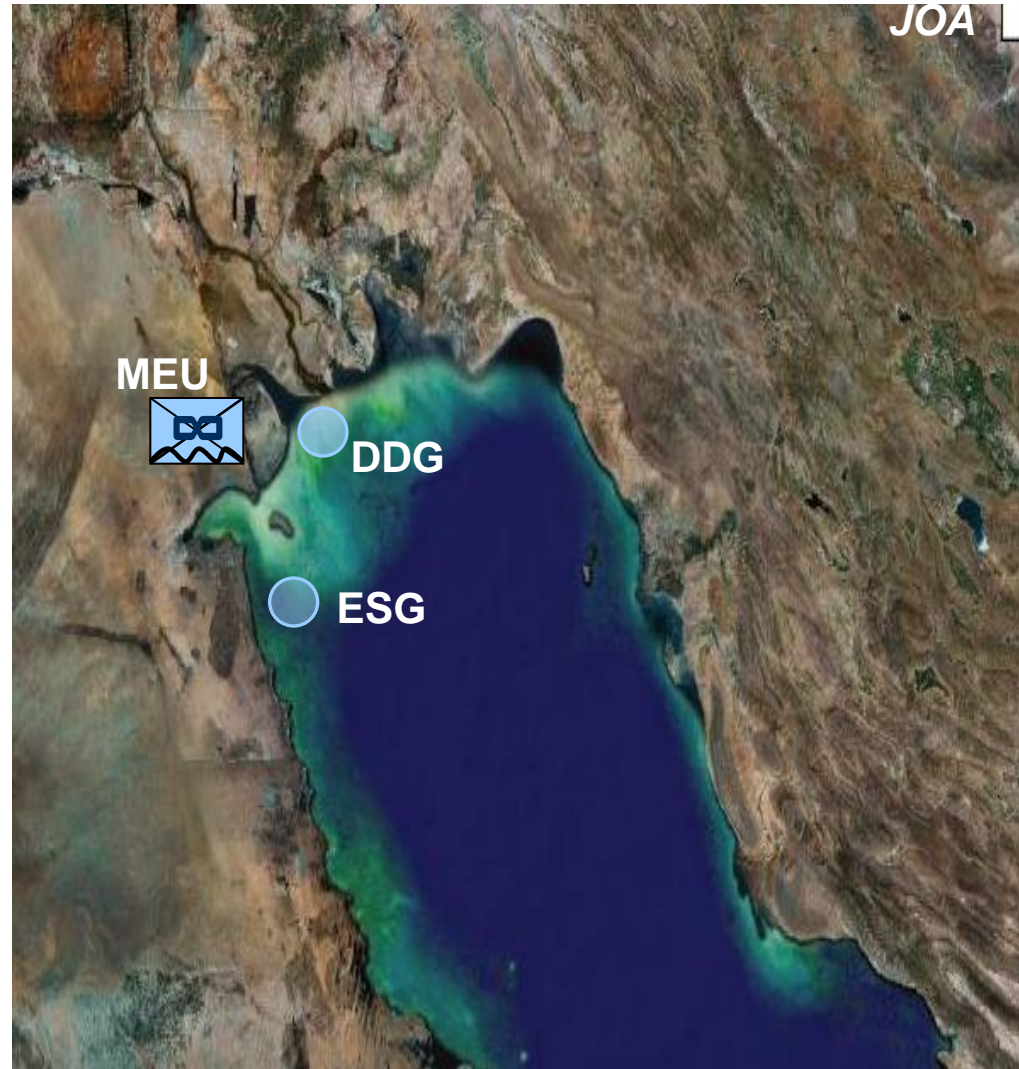
▼ Changing the C4I Business Model
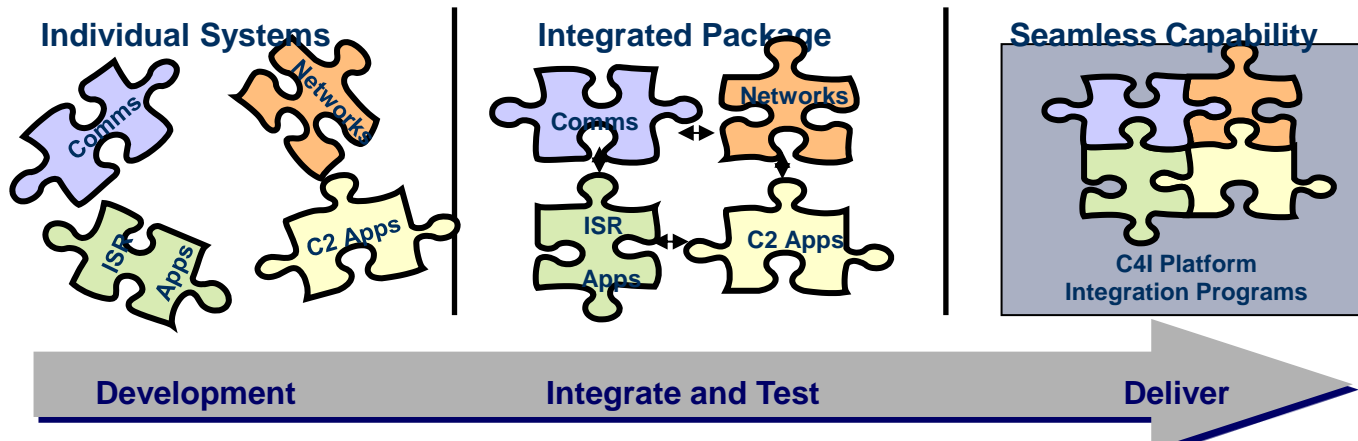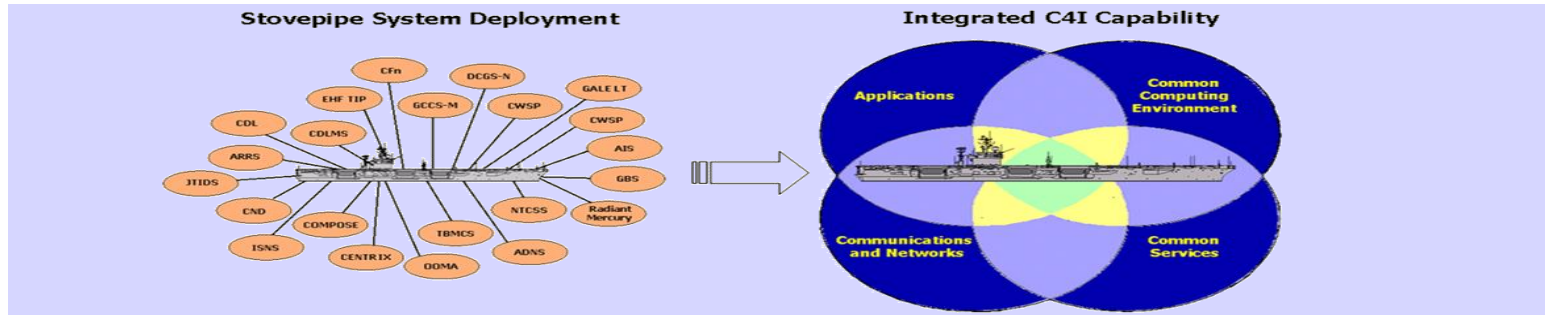
OPSIT/TACSIT – EXAMPLE ONLY

- ▼ **Expeditionary Strike Group (ESG) on station in Northern Gulf, DDG conducting Maritime Interception Operations (MIO)**

- ▼ **Marine Expeditionary Unit (MEU) ashore conducting Counter Proliferation**

- ▼ **I&W and Intel injects on impending arms shipment pushed to C5F MOC from ONI-transmitted to ESG, DDG via COP**

- ▼ **ESG forwards COP to MEU via EPLRS**

- ▼ **ESG to MEU Chat coordination**

- ▼ **ESG and DDG coordination via VTC, SIPR E-mail, Web and Streaming Video**

JOA

MEU

DDG

ESG

OPSIT/TACSIT Needlines

ONI

Intel injects, I&W on impending arms shipments (seaborne, terrestrial)

COP via GCCS-M

COP via GCCS-M

MEU

*SECVOX & VTC via SHF (Stimulated)

COP/Chat via EPLRS

DDG

*Coordination via SINCGARS UHF LOS-SECVOX (Simulated)

GCCS-TOPCOP

C5F MOC (Ashore)

FLT NOC

Teleport

ESG

Mission Planning via VTC, SIPRNet E-mail, Web, and Streaming Video: Stimulated Data Flows

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One SPAWAR – One Operational Environment!

Robust testing capabilities deliver fleet readiness

The Commercial Broadband Satellite Program (CBSP) **is a Naval Multiband Terminal and a commercial broadband service that supplements Navy-unique SATCOM needs. The program introduces the ability to port a wide-variety of bandwidths on an "as-needed" basis.**
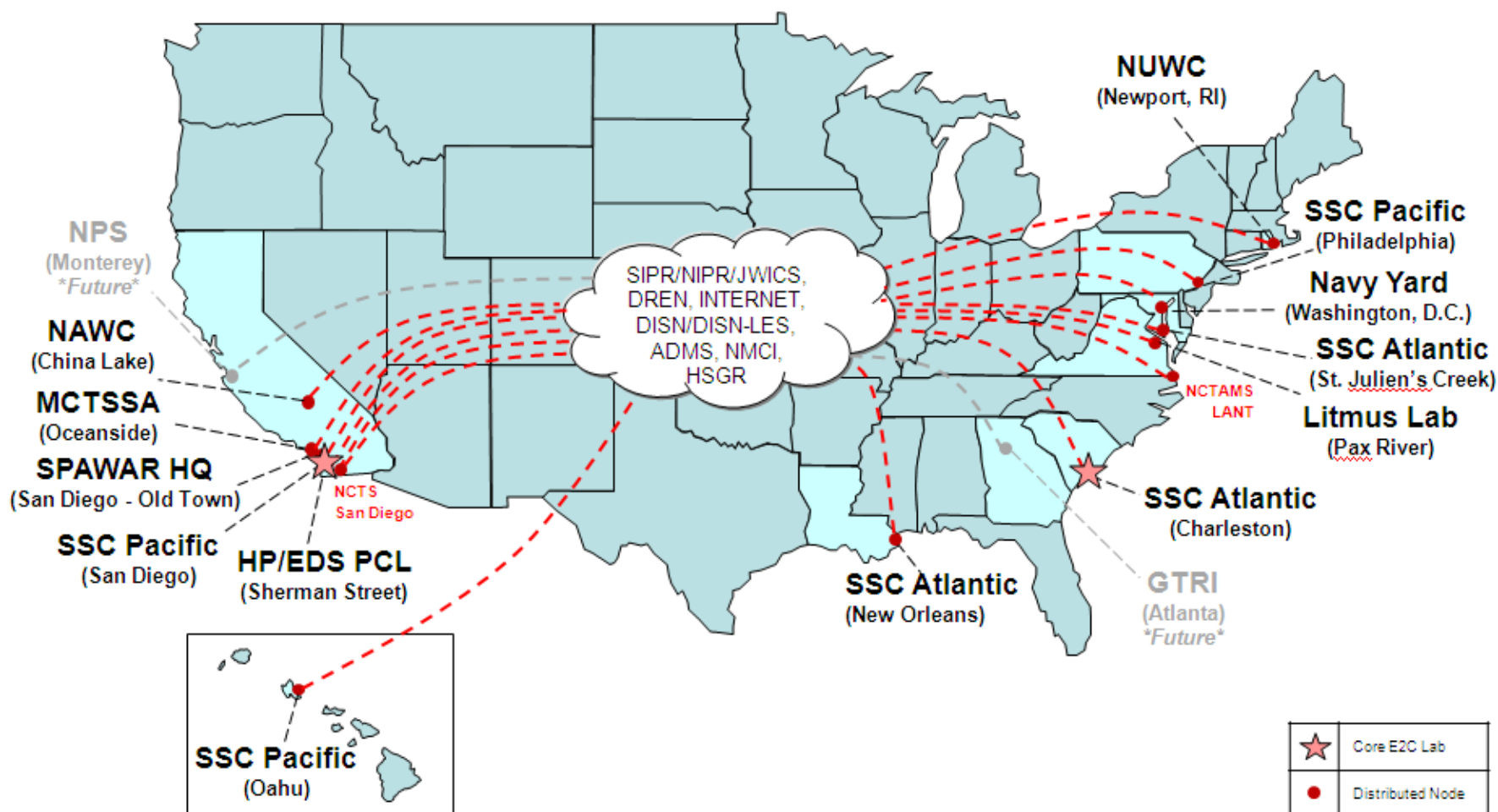
PII's Auxiliary IPT was tasked to conduct Stage 3 and 4 testing of CBSP SATCOM prior to shipboard installation using a modeled representation, allowing the target objectives to be achieved without taxing existing hardware and manpower. The IPT engaged Competencies 5.2, 5.5 and 5.9 to meet this demand signal.

Unique capabilities within our testing environments proved successful in providing a cost and time-savings solution to the fleet –

- Enterprise Engineering and Certification (E2C) , Testing and Integration Facility (TIF), and RDT&E network infrastructure collaboratively responded –

  - Implementation of Cypher-Text (CT) ship-to-shore test architecture utilizing "Ship-Set" hardware at the TIF, the command RDT&E network infrastructure and a hybrid of hardware and models to represent the shore capability.

  - A model of ADNS Ashore was instantiated by 5.9 utilizing artifacts captured during previous E2C events

  - The test architecture was stimulated using network test tools hosted in the E2C VHE (Virtual Hosting Engineering Environment).

Enterprise Engineering and Certification (E2C) VHE

Fleet requirements were met on schedule without taxing ashore hardware and manpower.
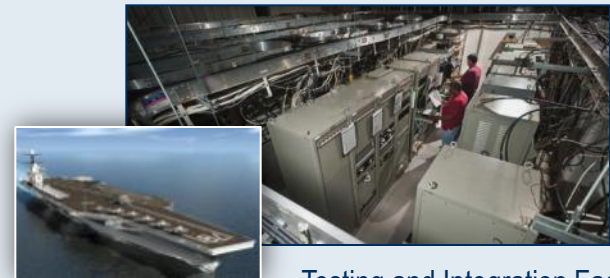
Testing and Integration Facility

SSC Atlantic Virtual Hosting Environment and CANES

▼ Virtual Hosting Environment - A "Sandbox" that provides Private or Public Clouds segregated by hardware and software based firewalls and IPS/IDS

- These Clouds are comprised of Virtual Servers and Virtual Networks that are used to create an independent environment for each system that is hosted in the VHE. Each Cloud has the ability to be "Privately" or "Publicly" interconnected to other Clouds within the VHE.

- Virtual Servers can be instantiated from an normal software installation or be inserted as an appliance. Thus, providing for ease of delivery and allows for consumers to host a representation of their systems.

SSC Atlantic Virtual Hosting Environment (cont)

▼ Can be used to host multiple POR and Non POR systems for engineering events (collaboration, distributed development, integration, and testing).

▼ Provides an integration environment that can be used with other hosted POR system that are internal to the VHE, or utilizing Hardware-in-the-Loop both local to the E2C Labs environment or other DoD agencies.

▼ Provide POR System representations for Emergent Taskers, ISEA, Help Desk, etc…

▼ Begin preliminary development of new systems or upgrades to existing systems immediately and with minimal risks and cost.

▼ Allows for immediate access for rapid development; while still maintaining all the features needed to ensure CM, Interoperability, Integration are implemented.

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E2C and Task Force Cyber Awakening

▼ The E2C - Cyber Range integration initiative provides a Joint-Service Environment to enable the training, exercising, testing, and evaluation functions for the DoD with a focus on Information Assurance (IA)/Computer Network Defense (CND) community.

▼ E2C's integration with Cyber Range will extend the services and functions of the Cyber Range into the E2C VHE.

▼ Once connected to the Cyber Range, it is possible to leverage a larger set of services provided to the entire GIG. These services include:

- CND/IA tools
  - HBSS
  - SourceFire
  - ArcSight
- Traffic Generation
  - Host based traffic generation
  - Network based traffic generation
- Robust Virtual Internet
  - Social networking
  - Malicious and benign websites
  - TOR